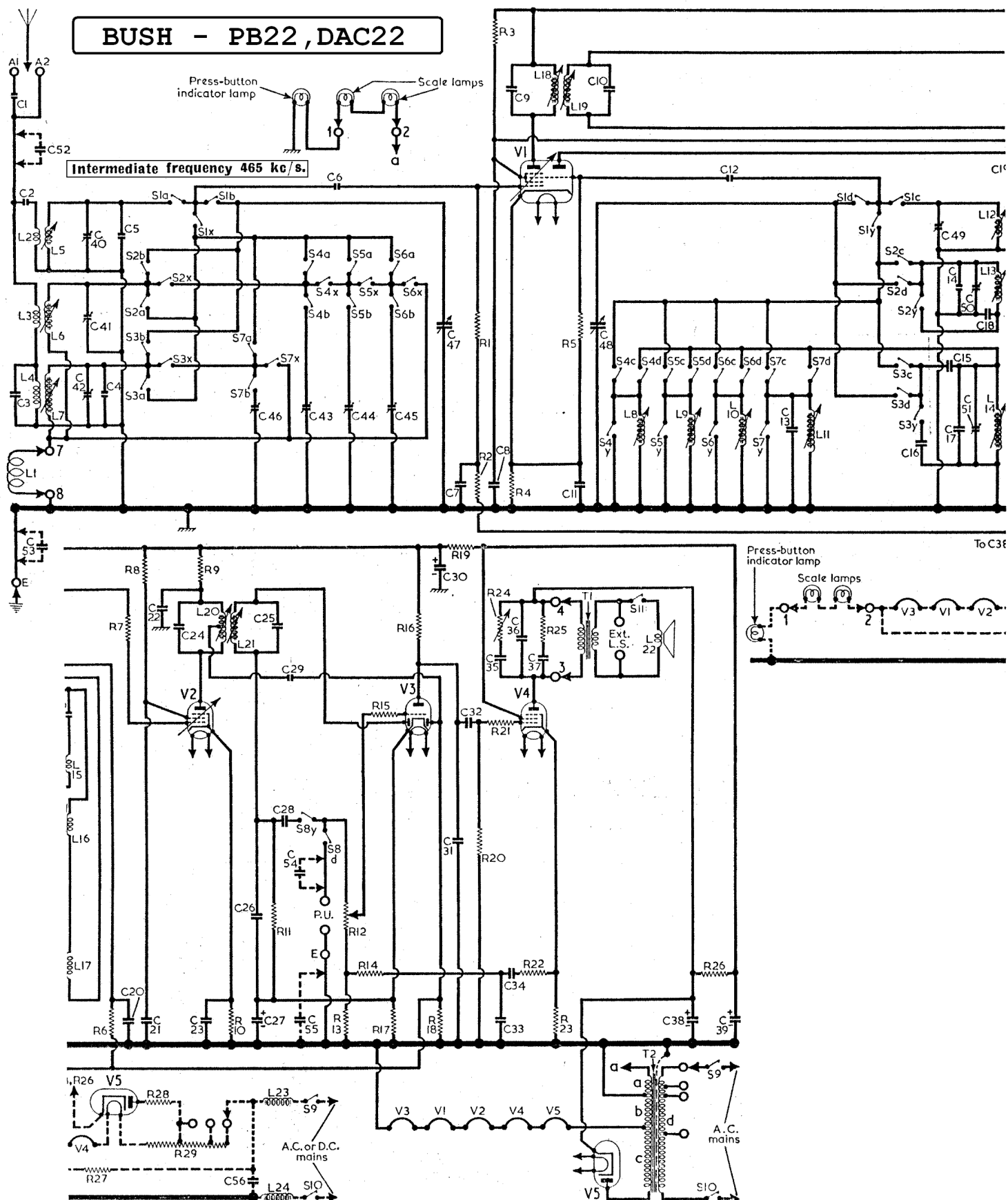
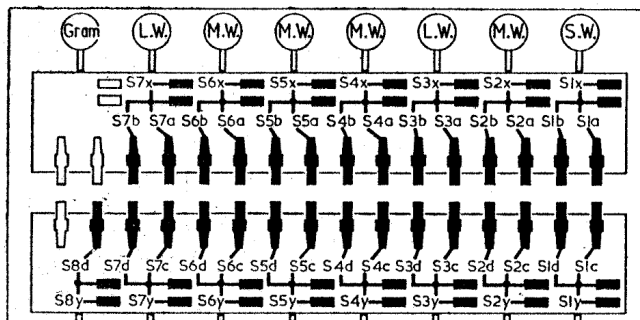


BUSH - PB22, DAC22



Valve	Anode		Screen		Cath.
	V	mA	V	mA	
V1 UCH42	120	3.0	60	1.5	1.4
V2 UF41	60	1.5	60	1.5	1.4
V3 UBC41	78	3.0	66	1.0	1.6
V4 UL41	203	40.16	175	5.0	10.0
V5 UY41	224	—	—	—	230.0

† A.C. voltage.



Diagrams showing the two sides of the press-button switch unit, that above being the upper side, carrying the aerial circuit switches.

RESISTORS		Values	Locations
R1	V1 C.G. ...	470kΩ	D4
R2	A.G.C. decoupling ...	1MΩ	E4
R3	V1 S.G. feed ...	15kΩ	E4
R4	V1 G.B. ...	220Ω	D4
R5	V1 osc. C.G. ...	47kΩ	D4
R6	A.G.C. decoupling ...	2-2MΩ	E4
R7	V2 C.G. stopper ...	220Ω	E5
R8	V2 screen feed ...	47kΩ	E4
R9	V2 anode decoup. ...	10kΩ	E4
R10	V2 G.B. ...	330Ω	E4
R11	Diode load ...	330kΩ	F4
R12	Volume control ...	2MΩ	F3
R13	Neg. feedback ...	1kΩ	F3
R14		3-3kΩ	F4
R15	V3 C.G. stopper ...	100kΩ	F3
R16	V3 anode load ...	150kΩ	F4
R17	V3 G.B. ...	5-6kΩ	E4
R18	A.G.C. diode load ...	1MΩ	E4
R19	H.T. smoothing ...	4-7kΩ	F4
R20	V4 C.G. ...	330kΩ	F4
R21	V4 C.G. stopper ...	10kΩ	F5
R22	Neg. feed-back ...	330Ω	F4
R23	V4 G.B. ...	220Ω	F4
R24	Tone control ...	50kΩ	E3
R25	Part tone correction ...	10kΩ	F4
R26	H.T. smoothing ...	3-3kΩ	G4
R27	Lamp ballast ...	10kΩ	—
R28	Surge limiter ...	150Ω	—
R29	Heater ballast ...	*1-25kΩ	—

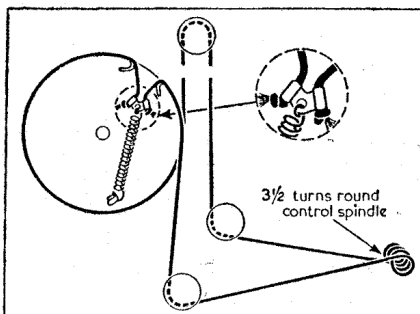
*Tapped at 950Ω + 150Ω + 150Ω from V5 heater.

OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	Frame aerial ...	—	—
L2	Aerial coupling coils ...	—	C1
L3		0-5	B1
L4	Aerial tuning coils ...	33-0	B1
L5		—	C1
L6	M.W. pre-set tuning coils ...	4-5	B1
L7		17-0	B1
L8	L.W. pre-set coil ...	1-0	B1
L9		1-5	B1
L10	Oscillator tuning coils ...	2-0	B1
L11		3-0	B1
L12	Oscillator reaction coils ...	—	C1
L13		3-5	B1
L14	1st I.F. f Pri. ...	9-6	B1
L15		—	C1
L16	2nd I.F. f Pri. ...	0-5	B1
L17		2-0	B1
L18	1st I.F. f Sec. ...	12-5	C2
L19		12-5	C2
L20	2nd I.F. f Sec. ...	*12-5	B2
L21		12-5	B2
L22	Speech coil ...	2-5	—
L23	R.F. chokes (A.C.) ...	3-0	—
L24	D.C. model only ...	3-0	—
T1	O.P. trans. { Pri. ...	700-0	—
	Sec. ...	0-41	—
T2	Mains { a ...	3-4	—
	b ...	32-0	—
	c ...	70-0	A2
	d, total ...	43-0	—
S1-S8	P.b. switch unit ...	—	B1
S9,S10	Mains sw., g'd R12	—	F3

DRIVE CORD REPLACEMENT

Above 50 inches of nylon braided glass yarn is required for a new drive cord, and it is advisable to make it up before fitting it. To do this, tie a non-slip knot at one end and thread the cord through one side of the anchor-plate, then thread the other end through the other side of the plate, and tie a second knot so that the overall length of cord from knot to knot is 48 inches.

The cord should then be run on as shown in the sketch in col. 4, where the drive system is drawn as seen when viewed from the front of the chassis with the gang at maximum capacitance. Inset in the sketch is a drawing of the anchor-plate, enlarged to show the direction and method of fixing the knots.



Sketch showing the tuning drive system, drawn as seen from the front of the chassis when the gang is at maximum. Inset is shown the method of tying cord to the anchor plate.

CAPACITORS		Values	Locations
C1	Aerial series ...	50pF	D5
C2	S.W. aerial coup. ...	50pF	C1
C3	Image rejector ...	800pF	B1
C4	L.W. fixed trim. ...	27pF	B1
C5	S.W. fixed trim. ...	10pF	C2
C6	V1 C.G. ...	50pF	D4
C7	A.G.C. decoupling ...	0-05μF	D4
C8	V1 S.G. decoup. ...	0-05μF	D5
C9	1st I.F. trans. tuning ...	110pF	C2
C10		110pF	C2
C11	V1 cath. by-pass ...	0-05μF	D4
C12	V1 osc. C.G. ...	50pF	D4
C13	L.W. pre-set trim. ...	316pF	B1
C14	M.W. fixed trim. ...	10pF	B1
C15	L.W. osc. tracker ...	316pF	B1
C16	Pre-set swamp ...	340pF	B1
C17	L.W. fixed trim ...	125pF	B1
C18	M.W. osc. tracker ...	556pF	C1
C19	S.W. reaction coup. ...	50pF	C1
C20	A.G.C. decoupling ...	0-05μF	E4
C21	V2 S.G. decoup. ...	0-05μF	E4
C22	V2 anode decoup. ...	0-05μF	E4
C23	V2 cath. by-pass ...	0-05μF	E4
C24	2nd I.F. trans. tuning ...	110pF	B2
C25		110pF	B2
C26	I.F. by-pass ...	100pF	F4
C27	V3 cath. by-pass ...	50pF	E3
C28	A.F. coupling ...	0-01μF	F5
C29	A.G.C. feed ...	50pF	E5
C30	H.T. smoothing ...	2μF	G3
C31	I.F. by-pass ...	0-001μF	F4
C32	A.F. coupling ...	0-01μF	F5
C33	Neg. feed-back ...	0-1μF	F4
C34		0-05μF	F4
C35	Part tone control ...	0-05μF	F4
C36	Tone correctors ...	0-001μF	F4
C37		0-01μF	F4
C38	H.T. smoothing ...	50μF	C2
C39		50μF	C2
C40	S.W. aerial trim. ...	—	C1
C41	M.W. aerial trim. ...	—	B1
C42	L.W. aerial trim. ...	—	B1
C43	M.W. aerial pre-set tuning capacitors ...	150pF	B1
C44		300pF	B1
C45	L.W. pre-set tune ...	450pF	B1
C46		450pF	B1
C47	Manual tuning ...	528pF	C1
C48		528pF	C1
C49	S.W. osc. trimmer ...	—	C1
C50	M.W. osc. trimmer ...	—	B1
C51	L.W. osc. trimmer ...	—	B1
C52	A.C./D.C. chassis isolators ...	0-005μF	—
C53		0-01μF	—
C54	R.F. filter ...	0-005μF	—
C55		0-1μF	—
C56		0-01μF	—

* Electrolytic. † Variable. ‡ Pre-set
§ Two 5pF capacitors in parallel.

CIRCUIT ALIGNMENT

All the following adjustments can be carried out with the chassis in its cabinet.

I.F. Stages.—Switch set to M.W. and tune to approximately 300 m. Connect output of signal generator, via a 0.1 μF capacitor in the "live" lead, to control grid (pin 6) of V2 and the earth socket. Screw the cores of L18 (location reference C2), L19 (C2), L20 (B2) and L21 (B2) fully out. Feed in a 465 kc/s signal and adjust the cores of L21 and L20 for maximum output. Transfer "live" signal generator lead to control grid (pin 6) of V1 and adjust the cores of L19 and L18 for maximum output.

R.F. and Oscillator Stages.—Although the following adjustments may be made with the chassis in the cabinet, it is convenient to refer to the substitute tuning scale printed on the back of the tuning drum. Readings on this scale are made against the top edge of the metal cursor. Transfer signal generator leads, via a dummy aerial, to A2 and E sockets. Check that with the gang at maximum capacitance the top edge of the substitute cursor coincides with the line marked "Datum" on the substitute tuning scale, and that the tuning scale cursor coincides with the line along the top of the L.W. and S.W. tuning scales. The following adjustments are made accessible by removing the press-button escutcheon.

L.W.—Switch set to L.W., tune to 2,000 m on substitute scale, feed in a 2,000 m (150 kc/s) signal and adjust the cores of L14 (H7) and L7 (H6) for maximum output. Tune set to 1,000 m, feed in a 1,000 m (300 kc/s) signal and adjust C51 (H7) and C42 (H6) for maximum output. Check calibration and repeat these adjustments if necessary.

M.W.—Switch set to M.W., tune to 500 m, fed in a 500 m (600 kc/s) signal and adjust the cores of L13 (H7) and L6 (H6) for maximum output. Tune set to 200 m, feed in a 200 m (1,500 kc/s) signal and adjust C50 (H7) and C41 (H6) for maximum output. Check calibration and repeat these adjustments if necessary.

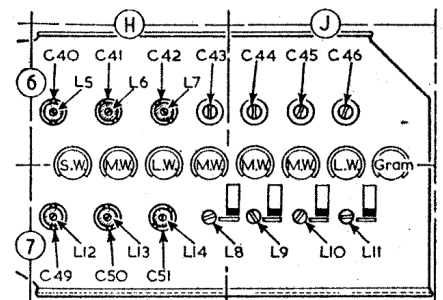
S.W.—Switch set to S.W., tune to 50 m, feed in a 50 m (6.0 Mc/s) signal and adjust the cores of L12 (H7) and L5 (H6) for maximum output. Tune set to 16.6 m, feed in a 16.6 m (18 Mc/s) signal and adjust C49 (H7) and C40 (H6) for maximum output. Check calibration and repeat these adjustments if necessary.

Pre-set stations.—A signal generator output may be used to set those adjustments roughly, but they should be subsequently adjusted on the stations they are intended to receive.

Numbering from left to right, when viewed from the front, the manually tuned press-buttons are: 1, S.W.; 2, M.W.; 3, L.W. Then follow the pre-set press-buttons: 4, 200-350 m; 5, 250-400 m; 6, 325-550 m; 7, 1,100-1,875 m. Button 8 is Gram.

When setting up a station, the pre-set button covering the appropriate range is pressed, the press-button escutcheon is removed, and the core adjustment below the button is set so that the groove round the end of the adjustment coincides approximately with the wavelength of the desired station on the small metal tuning scale. The core adjustment is rotated carefully in both directions until the signal is heard, and is then set for maximum output. The pre-set capacitor above the press-button is then adjusted for maximum output.

Adjustment to L6 or C41 will alter the tuning of the M.W. pre-set station trimmers, and after alignment of the M.W. manual circuits C43, C44 and C45 should be checked. Adjustment of L7 or C42 will alter the tuning of the L.W. pre-set trimmer, and adjustment of C51 or L14 will alter the tuning of all the pre-set coils, so that it is necessary after alignment of the L.W. manual circuits to check C46, L8, L9, L10 and L11.



Sketch of the alignment and press-button trimmer panel, drawn as seen from the front of the receiver after removing the press-button escutcheon. The centre row of circles represents the actual buttons.